

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371****1987-A-PCT-US**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5)

10/009072

INTERNATIONAL APPLICATION NO.

PCT/SE00/01173

INTERNATIONAL FILING DATE

7 June 2000

PRIORITY DATE CLAIMED

10 June 1999

TITLE OF INVENTION

TIRE DEVICE

APPLICANT(S) FOR DO/EO/US

TOMAS NILSSON

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☒ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☒ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☒ Other items or information:

**Notification of Recording PCT Applicant's change of name
Publication No. WO 00/76788 A1 that includes the Search Report**

JC13 Rec'd PCT/PTO 016 DEC 2001

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5) <div style="font-size: 24pt; font-weight: bold;">10/009072</div>		INTERNATIONAL APPLICATION NO. <div style="font-weight: bold;">PCT/SE00/01173</div>		ATTORNEY'S DOCKET NUMBER <div style="font-weight: bold;">1987-A-PCT-US</div>	
24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <div style="margin-left: 20px;"><input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00</div> <div style="text-align: right; font-weight: bold; margin-top: 5px;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>				CALCULATIONS PTO USE ONLY <div style="border: 1px solid black; height: 100px; width: 100%;"></div>	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				<div style="border: 1px solid black; padding: 2px;">\$890.00</div> <div style="border: 1px solid black; padding: 2px;">\$0.00</div>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	12 - 20 =	0	x \$18.00	<div style="border: 1px solid black; padding: 2px;">\$0.00</div>	
Independent claims	1 - 3 =	0	x \$84.00	<div style="border: 1px solid black; padding: 2px;">\$0.00</div>	
Multiple Dependent Claims (check if applicable).				<div style="border: 1px solid black; padding: 2px;"><input type="checkbox"/> \$0.00</div>	
TOTAL OF ABOVE CALCULATIONS =				<div style="border: 1px solid black; padding: 2px;">\$890.00</div>	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				<div style="border: 1px solid black; padding: 2px;">\$0.00</div>	
SUBTOTAL =				<div style="border: 1px solid black; padding: 2px;">\$890.00</div>	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				<div style="border: 1px solid black; padding: 2px;">\$0.00</div>	
TOTAL NATIONAL FEE =				<div style="border: 1px solid black; padding: 2px;">\$890.00</div>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).			<input checked="" type="checkbox"/>	<div style="border: 1px solid black; padding: 2px;">40</div>	
TOTAL FEES ENCLOSED =				<div style="border: 1px solid black; padding: 2px;">\$930.00</div>	
				<div style="border: 1px solid black; padding: 2px;">Amount to be: refunded \$</div> <div style="border: 1px solid black; padding: 2px;">charged \$</div>	
a. <input checked="" type="checkbox"/> A check in the amount of <u>\$930.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>19-0083</u> A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO:					
<div style="width: 45%; border: 1px solid black; padding: 5px;">Daniel J. Long, Reg. No. 29,404 SAND & SEBOLT Aegis Tower, Suite 1100 4940 Munson Street, NW Canton, Ohio 44718-3615</div> <div style="width: 50%; text-align: center; padding-top: 20px;"><div style="font-size: 18pt; font-family: cursive;">Daniel J. Long</div><div style="border-top: 1px solid black; margin-top: 5px;">SIGNATURE</div><div style="border-top: 1px solid black; margin-top: 10px;">Daniel J. Long</div><div style="border-top: 1px solid black; margin-top: 5px;">NAME</div><div style="border-top: 1px solid black; margin-top: 10px;">29,404</div><div style="border-top: 1px solid black; margin-top: 5px;">REGISTRATION NUMBER</div><div style="border-top: 1px solid black; margin-top: 10px;">5 Dec 2001</div><div style="border-top: 1px solid black; margin-top: 5px;">DATE</div></div>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:	TOMAS NILSSON
FOR:	TIRE DEVICE
SERIAL NO.	Not yet known
FILING DATE:	Filed Herewith
ATTORNEY DOCKET NO.	1987-A-PCT-US

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
BOX PCT
2900 Crystal Drive
Arlington, VA 22202-3513

Dear Sir:

The Applicant respectfully requests the entry of the following preliminary amendment before examination of the application.

In the claims

Please enter the amendments to the claims as shown on the attached sheets entitled "AMENDED CLAIMS". Applicant requests that each amended claim be substituted for the presently pending claim of the same number. For the Examiner's convenience, a clean version of the amended claims is also provided herewith on the sheets entitled "CLEAN VERSION OF THE AMENDED CLAIMS".

REMARKS

The above-referenced patent application was filed as PCT/SE00/01173 on 07 June, 2000. The claims were revised under Chapter II of the PCT proceedings.

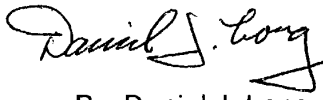
This preliminary amendment is being made to eliminate multiple dependencies and omnibus claims. The revisions to the claims may be found on the sheets entitled "AMENDED CLAIMS." . A clean set of the amended claims may be found on the sheets entitled "CLEAN VERSION OF THE AMENDED CLAIMS".

The claims under consideration in this application are therefore claims xxx

If the Examiner believes that a telephone interview would be beneficial to advance prosecution of the instant application to early issue, they are invited to contact the undersigned at the telephone number listed below.

Respectfully submitted at Canton, Ohio this 5th day of Dec., 2001.

SAND & SEBOLT



By: Daniel J. Long
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DJL/ff
Enclosure

AMENDED CLAIMS

1. [An arrangement relating to pneumatic tubeless tires that are fitted with a tire bead (12) in sealing abutment with a rim seat (13) inwardly from a rim edge (14) on each side of an undivided rim (11), characterised in that the tire is provided with an internal lip seal (16), which is made of rubber or some like elastic material and which extends along the rim seat (13) inwardly from the tire bead (12); in that the outer part of the internal seal (16) proximal to the rim edge (14) is fastened to the tire bead (12) at a distance from its end; in that the inner edge of the lip seal (16) rests on the rim (11); in that the inner part of the internal seal (16) proximal to the center of the rim (11) has a circumference which is slightly smaller than the circumference of the rim (11) at this location; and in that the seal (16) is adapted to seal at least in the region of the abutment of the tire bead (12) with the rim seat (13) through the influence of the pneumatic pressure in the tire (10).] A pneumatic tubeless tire of the type having a tire bead in sealing abutment with a rim seat inwardly from a rim edge on each side of an undivided rim, the improvement comprising:
an elastic internal lip seal which extends along the rim seat and inwardly from the tire bead; wherein an outer part of the internal lip seal proximal to the rim edge is fastened to the tire bead at a distance from its end; and an inner edge of the lip seal rests on the rim; the inner part of the internal seal proximal to the center of the rim having a circumference which is slightly smaller than the circumference of the rim at this location; and wherein the lip seal is adapted to seal at least in the region of the

abutment of the tire bead with the rim seat through the influence of the pneumatic pressure in the tire.

2. [An arrangement according to] The pneumatic tubeless tire as defined in Claim 1, [characterised in that] wherein the outer part of the lip seal [(16)] is glued to the tire rim [(2)].
3. [An arrangement according to] The pneumatic tubeless tire as defined in Claim 1 [or 2, characterised in that] wherein the lip seal [(16)] comprises a material of such softness as to cause the seal to lie in sealing abutment with its underlying supporting surface essentially along the whole of the extension of the seal.
4. [An arrangement according to] The pneumatic tubeless tire as defined in Claim 1 [or 2, characterised in that] wherein the lip seal [(16)] is comprised of a relatively rigid elastic material and is adapted to lie in sealing abutment with the rim [(11)] at least at the inward part of said seal.
5. [An arrangement according to any one of Claims 1-4, characterised in that] The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal [(16)] is fastened with the edge of its outer part spaced from the end of the tire bead [(12)] by at least 50-70mm.
6. [An arrangement according to any one of Claims 1-5, characterised in that] The

pneumatic tubeless tire as defined in Claim 1, wherein the lip seal [(16)] has a skirt-like configuration with the inner part of said seal resting loosely on the rim [(11)].

7. [An arrangement according to any one of Claims 1-6, characterised in that] The pneumatic tubeless tire as defined in Claim 1, wherein the inner edge of the lip seal [(16)] has the form of a [so-called] selvage.
8. [The use of the arrangement according to Claims 1-7 in low profile tires, preferably low profile tires intended for forestry service.] The pneumatic tubeless tire as defined in Claim 1, wherein the tire is a low profile tire.
9. The pneumatic tubeless tire as defined in Claim 8, wherein the tire is an off-road tire.
10. The pneumatic tubeless tire as defined in Claim 2, wherein the lip seal comprises a material of such softness as to cause the seal to lie in sealing abutment with its underlying supporting surface essentially along the whole of the extension of the seal.
11. The pneumatic tubeless tire as defined in Claim 2, wherein the lip seal is comprised of a relatively rigid elastic material and is adapted to lie in sealing abutment with the rim at least at the inward part of said seal.

12. The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal is manufactured from rubber.

CLEAN VERSION OF THE AMENDED CLAIMS

1. A pneumatic tubeless tire of the type having a tire bead in sealing abutment with a rim seat inwardly from a rim edge on each side of an undivided rim, the improvement comprising;

an elastic internal lip seal which extends along the rim seat and inwardly from the tire bead; wherein an outer part of the internal lip seal proximal to the rim edge is fastened to the tire bead at a distance from its end; and an inner edge of the lip seal rests on the rim; the inner part of the internal seal proximal to the center of the rim having a circumference which is slightly smaller than the circumference of the rim at this location; and wherein the lip seal is adapted to seal at least in the region of the abutment of the tire bead with the rim seat through the influence of the pneumatic pressure in the tire.
2. The pneumatic tubeless tire as defined in Claim 1, wherein the outer part of the lip seal is glued to the tire rim.
3. The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal comprises a material of such softness as to cause the seal to lie in sealing abutment with its underlying supporting surface essentially along the whole of the extension of the seal.

4. The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal is comprised of a relatively rigid elastic material and is adapted to lie in sealing abutment with the rim at least at the inward part of said seal.
5. The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal is fastened with the edge of its outer part spaced from the end of the tire bead by at least 50-70mm.
6. The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal has a skirt-like configuration with the inner part of said seal resting loosely on the rim.
7. The pneumatic tubeless tire as defined in Claim 1, wherein the inner edge of the lip seal has the form of a selvage.
8. The pneumatic tubeless tire as defined in Claim 1, wherein the tire is a low profile tire.
9. The pneumatic tubeless tire as defined in Claim 8, wherein the tire is an off-road tire.
10. The pneumatic tubeless tire as defined in Claim 2, wherein the lip seal comprises a material of such softness as to cause the seal to lie in sealing abutment with its underlying supporting surface essentially along the whole of

the extension of the seal.

11. The pneumatic tubeless tire as defined in Claim 2, wherein the lip seal is comprised of a relatively rigid elastic material and is adapted to lie in sealing abutment with the rim at least at the inward part of said seal.
12. The pneumatic tubeless tire as defined in Claim 1, wherein the lip seal is manufactured from rubber.

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CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10) Applicant(s): NILSSON, Tomas		Docket No. 1987-A-PCT-US 06 DEC 2001	
Serial No. Not yet known	Filing Date Filed Herewith	Examiner	Group Art Unit
Invention: TIRE DEVICE			
<p>I hereby certify that the following correspondence:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> Preliminary Amendment </div> <p style="text-align: center; font-size: small;">(Identify type of correspondence)</p> <p>is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: The Assistant Commissioner for Patents, Washington, D.C. 20231</p> <div style="margin-top: 20px;"> <div style="display: inline-block; text-align: center; width: 200px;"> <u>12/06/01</u> <small>(Date)</small> </div> <div style="margin-top: 40px; margin-left: 200px;"> Fiona Ferguson <small>(Typed or Printed Name of Person Mailing Correspondence)</small> <small>(Signature of Person Mailing Correspondence)</small> EL 038418984 US <small>("Express Mail" Mailing Label Number)</small> </div> </div>			

Note: Each paper must have its own certificate of mailing.

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TIRE DEVICE

The invention relates to pneumatic tubeless tires, which are fitted with a bead that lies in tight, sealing abutment with a rim seat inwardly of a rim edge on each side of an undivided rim. The invention is particularly suitable for use with tubeless tires for forestry service vehicles, for instance forest vehicles or forest machines, particularly those that are equipped with a bogey.

At present, tires used with forestry service vehicles and with vehicles for similar advanced use include air-filled tubes, since pneumatic tubeless tires, i.e. tires inflated without the use of an inner tube, lose air as a result of the heavy mechanical stresses and strains to which they are unavoidably subjected when driving over rough terrain, such as those often encountered in forests, for instance in clear-felled areas and similar areas. One cause in this respect resides in the heavy lateral movements that occur when negotiating curves, particularly in the case of bogey-equipped vehicles, therewith causing the walls of the tires to be pressed into contact with stones, logs and like obstacles in the terrain, wherewith the tire bead, i.e. that part of the tire which is in abutment with the rim seat can, in both instances, be forced loose from the rim seat over a longer or shorter time period. This results in an instantaneous leakage of air from the tire, and occurs so often that a short working shift is sufficient for the tire to be deflated to such an extent as to lose its function as a tire. It will be realised that this problem does not apply to tube-equipped tires, and consequently such tires are used exclusively for forestry service use, as far as we are aware.

Tube-equipped tires, however, do not fulfil present-day requirements relating to high productivity and limited costs in forestry work, since tube-equipped tires are prone to be pinched in the sides of the tire when passing over stones, rocks and stubs, resulting in repeated puncturing of the tubes and also in financial losses on the part of the users, in the form of the costs entailed by tire changes and repeated idling times necessitated by repair requirements. These problems are particularly troublesome in the case of tires that have extremely low profiles, which are the most common and most expedient type of tire for forestry work. For reasons of a manufacturing nature, the tubes in low profiled tires cannot be produced with an optimal profile/cross-section, which involves extra high stretch levels of more than 50% against a normal 30%. This high degree of stretch exacerbates the tube pinching problem and also problems caused by fatigue.

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Although various solutions to similar types of problems relating to tubeless tires have been proposed, none of these solutions has been found useful in respect of tires intended for forestry service or similar advanced terrain applications. Although the proposed solutions differ quite considerably from one another, a common primary feature of the solutions is directed towards pressing the tire bead mechanically against the rim seat.

For instance, US-A-2,731,063 proposes the use of an insert ring, principally in the form of a rubber-covered metal ring, adapted to press a respective tire bead against the tire rim on respective sides of the ring, said rim being a split ring in this particular case. In this case, one rim edge can be removed so as to enable the insert ring to be pushed in on the rim seat with the rim edge removed and thereafter adapted so as to clamp between the two tire beads and the rim edge. As will be understood, such an insert ring cannot be fitted to undivided rims, as distinct from the object of the present invention.

DE-B-1 024 384 proposes the use of a closed ring-shaped diaphragm or membrane which is connected to the bead of the tire so as to lie folded around the bead, and is pressed firmly between the bead and the rim seat. The diaphragm is folded double inwardly of the tire edge and therewith is pressed down against the central path of the rim by the tire pressure. This solution is intended for car tires and is not believed to be useful in the case of heavy tires, because the diaphragm will quickly be worn out when subjected to the heavy loads that are exerted between the edge of the tire and the rim in the case of heavier tires. WO 98/21056 proposes a similar construction for bicycle tires, with the same problems as those mentioned with the use of heavy tires.

Finally, DE-A-2 356 097 proposes the use of an inflatable ring-shaped so-called pressure bag which is inflated separately when placed in position. This solution is intended primarily for tires of large diameter used with agricultural appliances and road working appliances with which heavy torque shall be transferred and for which the normal air pressure is not sufficient to prevent the tire from sliding on the rim.

The object of the present invention is to provide a pneumatic tubeless tire arrangement with which problems caused by the leakage of air resulting from driving in rough terrain

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and being subjected to the mechanical influence of obstacles such as stones, rocks, tree stubs, ruts and ditches, are eliminated.

5 This object is achieved with an inventive arrangement having the features set forth in the accompanying Claims.

10 Thus, the inventive tire is provided with a lip seal made of rubber or some similar elastic material that extends internally and inwardly from the bead of the tire and along the rim seat. That part of the internal seal that lies proximal to the edge of the rim is fastened to the tire bead at a distance from its end. The circumference of that part of the internal seal which lies proximal to the centre of the rim is somewhat smaller than the circumference of the rim at this position and the seal is adapted to seal at least in the region around the abutment of the tire bead with the rim seat by virtue of the action of the pneumatic pressure in the tire.

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The outer part of the internal lip seal is suitably glued to the bead of the tire, although it may alternatively be fastened in some other way that will effectively hold the seal against the tire bead. Thus, the join between the seal and the tire bead need not be sealing in itself.

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The lip seal will preferably be comprised of a material of such softness that the seal will lie sealingly against its supporting surface throughout essentially the whole of its extension when subjected to the pneumatic pressure prevailing in the tire when inflated.

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Alternatively, the lip seal may be made of a relatively rigid elastic material and adapted so that at least its inward part will lie sealingly against the rim. In this case, the seal will not always lie against the underlying surface along the full length of the seal, but primarily only at its end portions. This can be suitable when tire pressures are extremely high.

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The lip seal is conveniently fastened at its outer edge at a distance of about 50-70 mm from the end of the bead.

The lip seal will often have a skirt-like shape with its inner part resting loosely on the rim, such a tire also being referred internally to as a "skirt tire", although it lies within the scope of the invention to give the seal some other shape and also to fasten the inner part of the

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seal to the rim in the same manner as it is secured to the bead of the tire should this be found desirable for some reason or another. The inner edge of the lip seal may be formed as a so-called selvage that stretches towards the rim and may be glued thereto or fastened in some other way.

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The inventive arrangement may be used beneficially with low profile tires, particularly tires that are used on forestry vehicles or forestry machines equipped with bogeys, although it can also be used generally with all types of tubeless tires.

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The invention will now be described in more detail with reference to the accompanying drawing, in which Figure 1 is a cross-sectional view of a tire and an associated rim in a non-assembled state; and Figure 2 is a similar cross-sectional view of an inflated tire assembly.

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Figure 1 illustrates a tubeless tire 10 and a rim 11, which are shown in an unassembled state for the sake of illustration. The rim 11 includes a rim seat 13, a rim edge 14 and a ridge 15 on each side of its centre part. The tire 10 includes a bead 12 which when the tire is fitted lies against the rim seat 13 from the edge 14 of the rim to the ridge 15 and therewith seal against the rim 11 so that air pumped into the tire 10 will not escape therefrom. A lip seal 16 is glued or otherwise affixed to the bead 12 in the region 17 thereof. Although the illustrated embodiment of the invention includes a rim 11 that is provided with a ridge 15, it will be understood that rims which lack such a ridge may also be used within the scope of the invention.

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Figure 2 shows the tire 10 and the rim 11 assembled and the tire inflated. The air pressure inside the tire 10 causes the lip seal 16 to lie sealingly against the rim 11 in the region outwardly of the rim seat 13, i.e. towards the ridge 15 and the inwardly located parts of the rim 11 facing towards the centre of said rim.

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Should the bead 12 of the tire be loosened inwardly from the rim seat 13 as a result of external forces for a shorter or longer period of time, the air pressure in the tire 10 will cause the lip seal 16 to remain in abutment with both the bead 12 and the rim 11 and therewith reseal any gap that may occur therebetween. If an object, such as a wood chip, stone or the like, wedge between the edge 14 of the rim and the bead 12 and therewith result in a more

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CLAIMS

1. An arrangement relating to pneumatic tubeless tires that are fitted with a tire bead (12) in sealing abutment with a rim seat (13) inwardly from a rim edge (14) on each side of an undivided rim (11), characterised in that the tire is provided with an internal lip seal (16), which is made of rubber or some like elastic material and which extends along the rim seat (13) inwardly from the tire bead (12); in that the outer part of the internal seal (16) proximal to the rim edge (14) is fastened to the tire bead (12) at a distance from its end; in that the inner part of the internal seal (16) proximal to the centre of the rim (11) has a circumference which is slightly smaller than the circumference of the rim (11) at this location; and in that the seal (16) is adapted to seal at least in the region of the abutment of the tire bead (12) with the rim seat (13) through the influence of the pneumatic pressure in the tire (10).
2. An arrangement according to Claim 1, characterised in that the outer part of the lip seal (16) is glued to the tire rim (2).
3. An arrangement according to Claim 1 or 2, characterised in that the lip seal (16) comprises a material of such softness as to cause the seal to lie in sealing abutment with its underlying supporting surface essentially along the whole of the extension of the seal.
4. An arrangement according to Claim 1 or 2, characterised in that the lip seal (16) is comprised of a relatively rigid elastic material and is adapted to lie in sealing abutment with the rim (11) at least at the inward part of said seal.
5. An arrangement according to any one of Claims 1-4, characterised in that the lip seal (16) is fastened with the edge of its outer part spaced from the end of the tire bead (12) by at least 50-70 mm.
6. An arrangement according to any one of Claims 1-5, characterised in that the lip seal (16) has a skirt-like configuration with the inner part of said seal resting loosely on the rim (11).

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7. An arrangement according to any one of Claims 1-6, characterised in that the inner edge of the lip seal (16) has the form of a so-called selvage.
8. The use of the arrangement according to Claims 1-7 in low profile tires, preferably
- 5 low profile tires intended for forestry service.

04

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2000 (21.12.2000)

PCT

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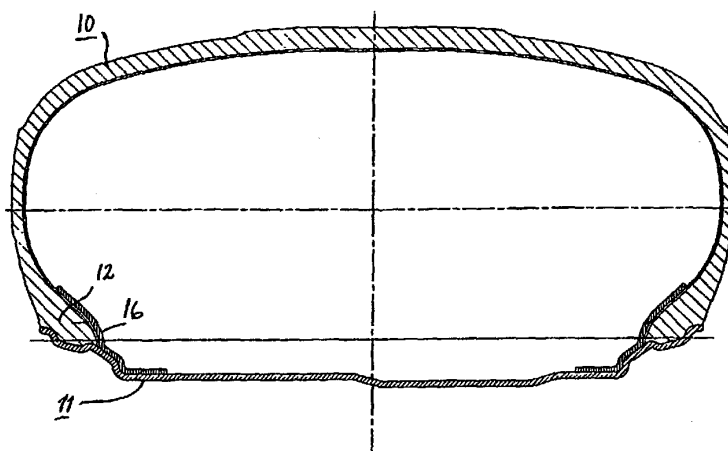
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(54) Title: TIRE DEVICE



(57) Abstract: An arrangement relating to pneumatic tubeless tires which are fitted with a tire bead (12) in sealing abutment with a rim seat (13) inwardly from a rim edge (14) on each side of an undivided rim (11). The tire is provided with an internal seal (16) which is made of rubber or some like elastic material and which extends inwardly from the tire bead (12) along the rim seat (13). The outer part of the internal lip seal (16) that lies proximal to the rim edge (14) is fastened to the tire bead (12) at a distance from its end. The inner part of the internal seal (16) that lies proximal to the centre of the rim (11) has a circumference that is slightly smaller than the circumference of the rim (11) at this location. The seal (16) is adapted to seal at least around the region in which the tire bead (12) is in abutment with the rim seat (13) through the influence of the pneumatic pressure in the tire (10).

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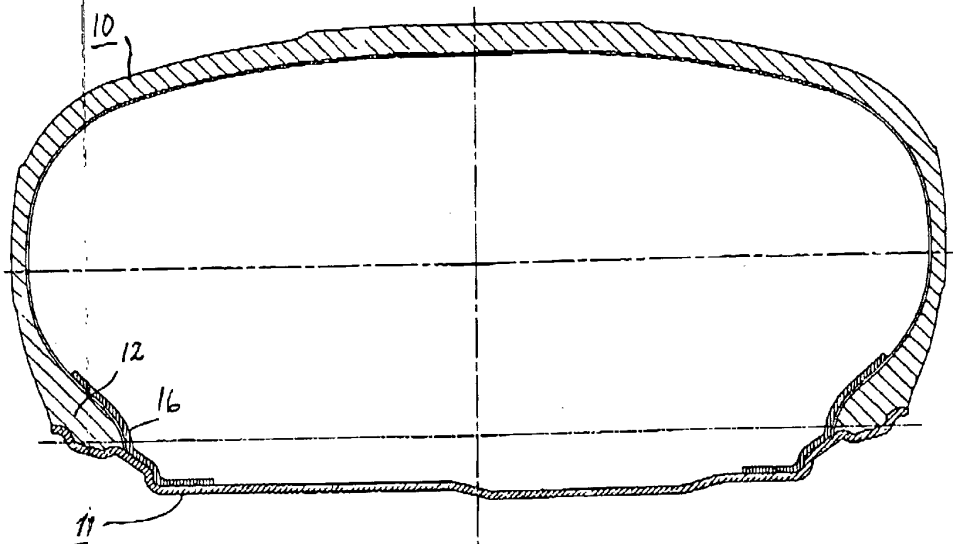


Fig. 2

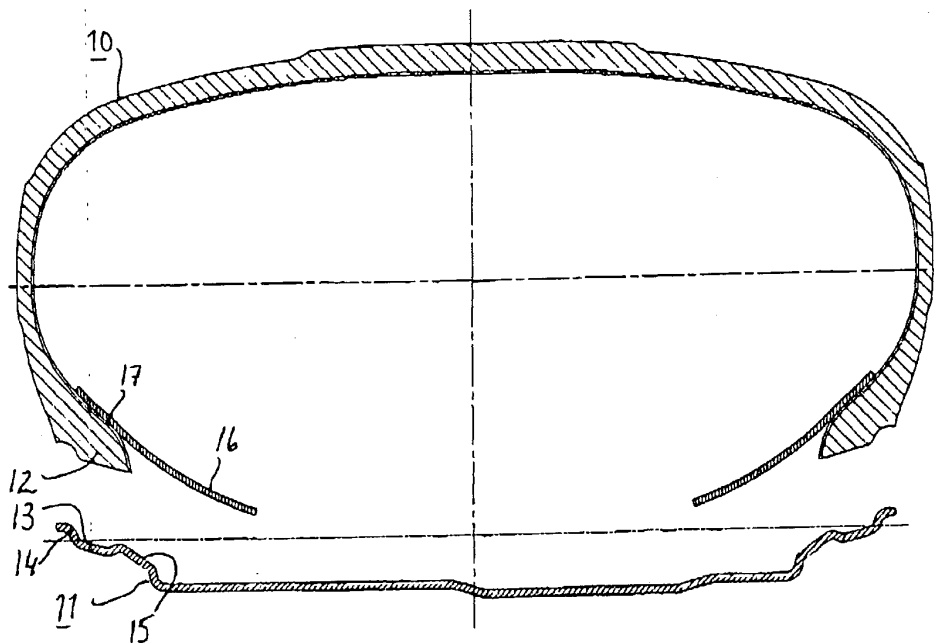


Fig. 1

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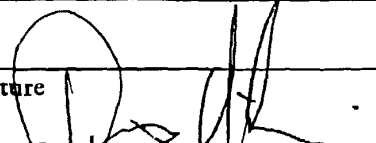
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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UNITED STATES -- PATENT
DECLARATION FOR PATENT APPLICATION

Attorney's Docket No.: 1987-A-PCT-US

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled TIRE DEVICE, the specification of which

was filed as PCT international application

number PCT/SE00/01173

on 7 June 2000

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

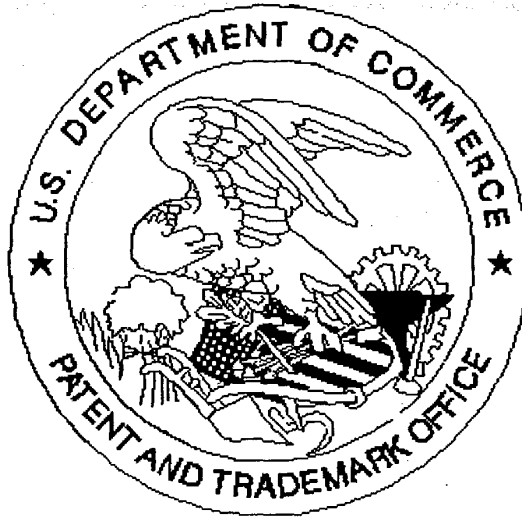
Prior Foreign Application(s):

Appln. No.	Country	Date Filed	Priority Claimed	
9902170-1	Sweden	10 June 1999	YES X	NO
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			YES	NO

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Appln. Serial No.	Filing Date	Status: Patented, Pending, Abandoned		
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